Diastolic valvular regurgitation in patient with complete atrio-ventricular block

Abstract :

Mitral regurgitation in conduction disorders is a rare feature of functional valve regurgitation

In patients with high degree atrioventricular block, optimal ventricular systole may not coincide perfectly with the end of atrial systole; in this situation, the increase in the left ventricular filling pressure after atrial systole, especially in cases of complete atrioventricular block causing a reversal of the pressure gradient during atrial relaxation and medium or late diastolic mitral regurgitation may develop, as well as secondary tricuspid regurgitation

here we report the observation of a patient admitted for a complete atrioventricular block, with reversible mitral and tricuspid regurgitation after implantation of a pacemaker

INTRODUCTION :

Diastolic valve regurgitation is a rarely described functional entity, often affecting the mitral valve, often poorly diagnosed in the context of severe conductive findings.

Usually regressive after curative treatment of the cause.We report the case of mitro-tricuspid regurgitation occurring in the context of complete atrioventricular block, through the case we explain the mechanism of this entity

CASE REPORT :

A 84 years old woman , with a history of hypertension treated by angiotensin receptor blockers ,presented to emergency with generalized fatigue and dizziness , that she had experienced during the prior week , without syncopal episode, faintness or chest pain ; On physical examination at admission , her blood pressure was 130 /76 mmHg , the pulse rate was 30 bpm , with systolic murmur on xiphoid process and cardiac apex

Routine laboratory tests were normal ; Her electrocardiogram showed a complete atrio-ventricular block with ventricular escape rhythm at 30 bpm. The patient was admitted to cardiology intensive care unit , transthoracic echocardiography revealed : Left ventricule with minimal hypertrophy, good global and segmental contractility, EF = 55 % , mild left atrial dilatation ; color mode objectify a mild to moderate mitral and tricuspide regurgitation with low velocity ;Continuous mode confirmed the diastolic type of the regurgitation . (figure 1)

The patient underwent implantation of a dual-chamber pacemaker (Medtronic) , the postoperative ECG showed an atrial-sensed, ventricular-paced rhythm (figure 2)

The evolution was marked on the control echocardiography carried out 2 weeks later by the regression of the valvular regurgitation. (figure 2)

DISCUSSION

Atrioventricular conduction abnormalities are recently a well-known cause of diastolic atrioventricular regurgitation. Other potential aetiologies include severe acute aortic regurgitation and restrictive ventricular physiology

Diastolic mitral regurgitation is a type of functional mitral regurgitation ;tricuspid regurgitation is usually accompanied with ; Its occurrence in the diastolic phase of cardiac cycle renders this regurgitation an easily ignored entity. Confusing it with systolic mitral regurgitation occasionally happens.

diastolic mitral and tricuspid regurgitation are almost universally present in patients with AV block and are associated with a diastolic murmur. First mechanisms were described by Schnittger and al [1].:The murmur coincides with forward AV valve flow. Diastolic regurgitation is silent. Effective AV valve closure is not established until ventricular systole occurs, as demonstrated by different mode echocardiographic recording of the mitral valve.

The reversal of left atrioventricular pressure gradient during diastole and the incomplete closure of mitral valve are the essential conditions. Diastolic mitral regurgitation develops under various situations, where the mechanisms of diastolic reversal of left atrioventricular pressure gradient differ. [2].

For the complete closure of AV valve, the effective and synchronized ventricular contraction is essential. Incomplete closure of the AV valve is related to valvular regurgitation.When the complete AV block is present, the left

ventricular end-diastolic pressure could be higher than atrial pressure, leading to the diastolic AV regurgitation through the incompletely closed AV valve [3,4].

In literature, many case reports have been published [5,6] It is conceivable that, in patients such as ours who have high-grade AV block, moderate diastolic mitral and tricuspid regurgitation contributes to the symptoms associated with the condition. Restoring AV synchrony with dual-chamber pacing eliminates diastolic MR in these cases. Echocardiography with color Doppler is the most useful imaging method for identifying diastolic MR in patients with AV block because it enables visualization of the direction, velocity, and timing of regurgitant blood flow.

CONCLUSION

Valvular insufficiency during conduction disorders, especially in cases of complete atrioventricular block, is an entity that is often underestimated, its diastolic duration brings more specificity, as does the state of the valves, the reversible character is to be confirmed after implantation pacemaker.

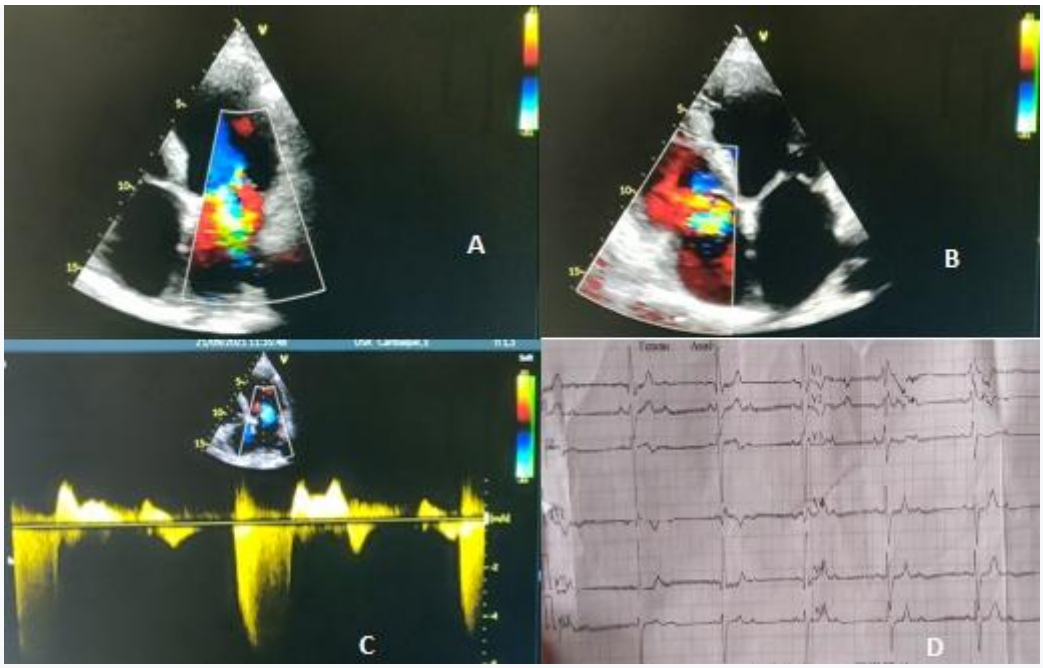

Figure 1 : initial transthoracic electrocardiography : (A-B) color mode objectify mitral and tricuspid regurgitation , (C) continuous mode : systole-diastolic regurgitation (D)Initial Electrocardiograme showed complete atrioventricular block

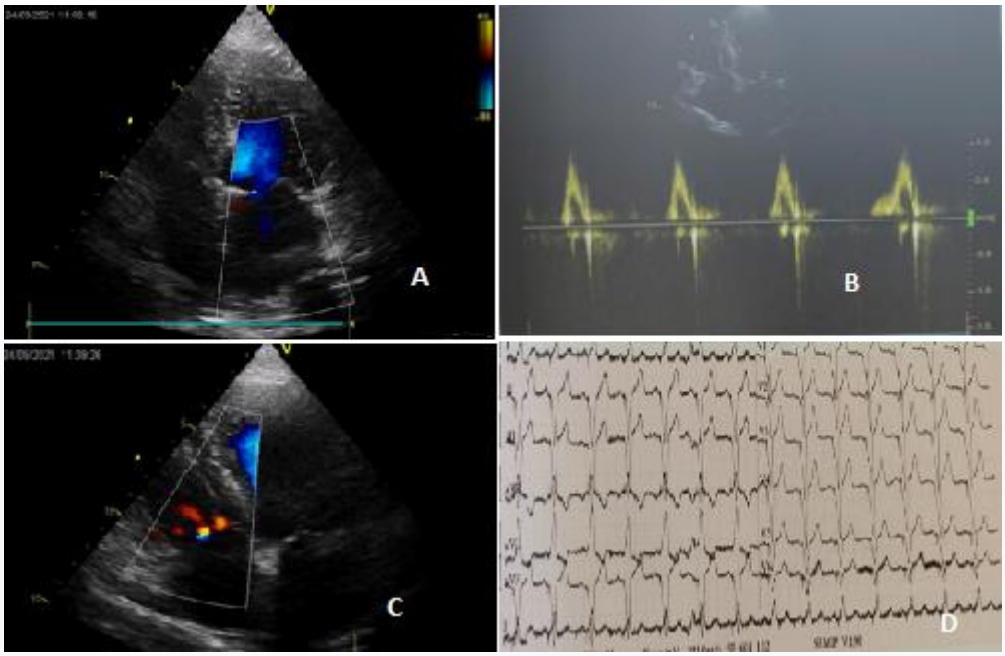

Figure 2 : (A-B-C) regression of valvular regurgitation on color doppler and continuous mode in echocardiography of control (D)post implantation of dual chamber pacemaker electrocardiogramm

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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